During this time the male, remaining at her side, leans and rubs himself gently against her; then, all at once, he himself turns over towards the ceiling of the nest, his tail waves with a regular motion, and finally a tremor accompanied by a slight forward movement agitates his whole body. This is recognizable as the genital spasm.

On the conclusion of the spawning, the female abandons the nest while the male remains as the assiduous guardian of it. He keeps his pectoral fins and tail continually in motion to ensure the constant renewal of the water. He furiously pursues the other fish which pass too near him: if one of them, even much larger than himself, happens to penetrate into his nest, he bites and worries it until it takes to flight.

Blennius Montagui is extremely careful as to the cleanliness of his abode; he carries away to a distance all foreign bodies which enter it, driven by the currents. Nothing is so curious as to see him seize with his mouth large fragments of shells, and carry them to the furthest possible distance from his nest. It is impossible to succeed in tiring out his patience; he casts outside his dwelling all foreign bodies introduced by the observer.

The females spawn several times during the same season, and the same male fertilizes the ova of several different females. The male guards his progeny only so long as the incubation of the ova lasts; the embryos on hatching are left to themselves and live in the open water.— *Comptes Rendus*, t. cxvii. no. 5 (July 31, 1893), pp. 289–291.

A Synopsis of the European Newts.

By Dr. J. von Bedriaga, of Nice.

Since the publication of my detailed treatise upon the Urodele Amphibia of Europe will still take some time, I venture to bring forward at once a systematic arrangement of our species of *Molge*. In so doing it is my intention to lay stress chiefly upon permanent differences, and I shall endeavour to disregard secondary sexual characters.

Several years ago Leydig and later Boulenger alluded to constant specific characters in the case of certain Urodela. Nevertheless batrachologists do not yet seem to have succeeded in discovering in the case of all our species of newts characters which are at all times recognizable and common to both sexes, since in all analytical tables we are invariably confronted with the time-honoured enumeration of secondary sexual characters, as well as of sexual peculiarities which are subject to periodical changes. Moreover, owing to the fact that features belonging to the last-mentioned category occur more especially in the male sex, we acquire in the majority of cases no conception of the specific type, but rather obtain a complex of characters which merely serves for the definite determination of the male individuals. The characteristics upon which an empirical distinction of the females was based had, as is well known, in many cases to be sought in the coloration, size, and shape of the entire

body and of various parts. It is scarcely necessary for me to point out that differences of this kind, although easy to see, are sometimes difficult to express in words.

It is true that in the males of *Molge* the specific characters, especially at the breeding-season, are considerably more prominent than in the females; moreover, they catch the least practised eye, and I readily admit that it is extremely difficult to escape from the beaten path of many systematists and to strike out a new way in order to preserve the conception of the species. The fact is that the males of *Molge* possess a pronounced tendency towards variation, and that this inclination expresses itself especially in the development of their nuptial characteristics; while the females exhibit isolated instances of variability, in general possess a limited capacity for seasonal variation, rather incline to the preservation intact of their primitive characters, and in consequence of this, moreover, check rather than facilitate the development of the specific type.

Cases of dimorphism in the one sex are known in our species of *Molge*. *Molge vulgaris*, L., and var. *orientalis* vel *meridionalis* are forms which are distinguished solely by the difference in the nuptial equipment of the males; and it almost appears that in the case of the males modifications of the nuptial dress occasion the dimorphism of that sex, and that this dimorphism may lead to the formation of two species. On the one hand a nuptial dress, a tendency of the males to vary, and a dimorphism of the male sex in the spring give rise to specific characters which are obvious, although sometimes temporary, while on the other a want of special nuptial characters and an absence of the impulse which leads to variation produce females which remain almost alike and of similar aspect. Owing to this circumstance the attempt to draw up a series of characters which shall be really serviceable, permanent, and common to both sexes is fraught with unusual difficulty.

The following table will perhaps induce those who are interested in the subject to take up for themselves the question which has been raised and to lend us their aid and advice. It is absolutely necessary that we should at last be able to satisfy ourselves as to the reasons why this *post nuptias* male must be called *Molge Boscai* rather than *M. Montandoni* and why that female is termed *M. palmata*.

Table for the Determination of the Species.

I. The strongly developed process of the frontal unites with the squamosal or its anterior process, and constitutes an ossified, or partly cartilaginous, partly bony, arch bridging over the orbit.

A. An unpaired septum cartilagineum nasi arises from the ethmoidal plate, and extends as far as the inferior opening of the cavum internasale.

Vomero-palatine rows of teeth extending beyond the choanæ anteriorly. *M. Waltli*, Michah.

Vomero-palatine rows of teeth not extending beyond the choanæ.... *M. aspera*, Dugès.

B. The parts which constitute the cavum internasale extend as far as the ethmoidal plate, and represent a completely or almost completely osseous septum nasale.
  a. Quadrate directed backwards. Anterior process of the squamosal almost or precisely as long as the frontal process .... *M. Rusconii*, Gené.
  b. Quadrate directed forwards or downwards. Anterior process of the squamosal shorter than the frontal process.
    1. Pterygoid reaching the upper jaw ("Oberkieferjochbogen"); internasal space about as wide as the basal breadth of the three longest toes .... *M. Boscai*, Lataste.
    Internasal space considerably narrower than the basal breadth of the three longest toes ..... *M. Montandoni*, Blgr.
    2. Pterygoid not reaching the upper jaw .. *M. palmata*, Schneid.

II. The slightly developed or somewhat long frontal process is connected with the squamosal or its anterior process by means of a ligament.
Gular fold wanting. Anterior region of the head much flattened. Internasal space as wide or somewhat wider than the interpalpebral space, equalling the distance from the eye to the nostril, and greater than the length of the second finger (measured on the outside) .... *M. montana*, Savi.
Gular fold distinct. Anterior region of the head very convex. Internasal space narrower than the interpalpebral space, less than the distance from the eye to the nostril, and shorter than the second finger (measured on the outside).
Belly unspotted ..... *M. alpestris*, Laur.
Belly spotted.
  a. The first finger reaches at the most to the anterior end of the first phalanx of the second ..... *M. vulgaris*, L.
  b. The first finger extending beyond the anterior end of the first phalanx of the second.
  Belly yellow or orange-yellow, with dark spots ..... *M. Blasiusi*, de l'Isle.
  Belly brownish or grey-brown, with more or less distinct dark spots ..... *M. marmorata*, Latr.

III. No connexion between the scarcely indicated process of the frontal and the squamosal. *M. cristata*, Laur.

Nice, April 20, 1893.

—*Zoologischer Anzeiger*, xvi. Jahrg., no. 421, June 12, 1893, pp. 214–216.